

REMARKS

## A. 35 U.S.C. §112

Claims 1-11 stand rejected under 35 U.S.C. 112, second paragraph as being indefinite. First, the Office Action states that the scope of the term "about" is not known. In order to overcome this rejection, the term "about" has been removed where present in the claims (i.e., claims 1 and 6). Second, the Office Action states that the scope of the phrase "hop solids" is not known. In order to overcome this rejection, the term "hop solids" has been defined in claims 1 and 6 as described in many locations throughout the specification (see, e.g., page 3, lines 9-18; page 10, lines 1-9; page 12, lines 11-21). Claims 1, 3, 6 and 8 have also been amended to avoid any antecedent basis issues with respect to the occurrence of the term "non-polar" twice in amended claims 1 and 6.

## B. 35 U.S.C. §103(a)

Claims 1-11 stand rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 5,972,411 to Goldstein *et al.* (Goldstein). In the previous Office Action of October 9, 2002, it was stated that Goldstein teaches the production of a beer additive produced from hop solids. The hop solids are extracted with aqueous alcohol and the hop solids extract is purified by use of a chromatography column. It was recognized that Goldstein does not teach washing the hop solids extract with a non-polar solvent capable of removing residual alpha acids. However, the Office Action stated that it would be obvious to purify the hop solids extract of Goldstein with hexane as hexane is a known hop extractant. The Office Action also cited *Ex parte Gray*, 10 USPQ2d 1922, which stated that "Purer forms of known products may be patentable, but the mere purity of a product, by itself, does not render the product unobvious."

In the present Office Action, Applicants' amendment of the claims to recite the final concentration of alpha acids was acknowledged. The obviousness rejection was maintained and *Ex parte Obiaya*, 227 USPQ 58, was cited for the proposition that "the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious." In particular, the Office Action states that hexane is a well known hop extractant and its use in the Goldstein process would be obvious.

The requirements for establishment of a *prima facie* case of obviousness are well settled and are stated at M.P.E.P. 2143 as follows:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

It is respectfully submitted that the present Office Action fails to establish a *prima facie* case of obviousness for the subject matter of independent claims 1 and 6 (and claims 2-5 and 7-11 that depend thereon).

1. The Prior Art of Record Fails To Provide Motivation To Modify Goldstein

In order to establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. It is believed that Goldstein fails to provide motivation to wash the hop solids extract with a non-polar solvent (e.g., hexane) capable of removing residual  $\alpha$ -acids as recited in the pending claims.

Goldstein describes a bitter additive produced from hop solids. The hop solids are extracted with aqueous alcohol and the hop solids extract is purified. At column 6, lines 4-19 of Goldstein it is stated that the concentration and purification of the aqueous extract of hop solids can be accomplished by using polymeric adsorbent materials, derivatized silica gel, activated carbon, cellulose, as well as membrane processes such as reverse osmosis, ultrafiltration and size exclusion. The purification methods are stated as being capable of removing at least a portion of the free carbohydrates and inorganic salts from the aqueous alcohol extract of hop solids.

Nothing in Goldstein teaches or suggests the removal of residual  $\alpha$ -acids from the aqueous extract of hop solids. Furthermore, the purification methods discussed in Goldstein, that is, chromatography and membrane processes, in no way suggest washing the aqueous extract of hop solids in a non-polar solvent as recited in the pending claims. It is true that hexane is used to extract hops. However, there needs to be a suggestion in Goldstein that hexane could or should be used to *wash the aqueous extract of hop solids*.

Thus, it is submitted that the Office Action fails to establish why one would be motivated to replace the chromatography and membrane purification processes of Goldstein with a washing of the hop solids extract with a non-polar solvent capable of removing residual  $\alpha$ -acids as recited in the pending claims.

## 2. The Prior Art of Record Fails To Teach Or Suggest All The Claim Limitations

In order to establish a *prima facie* case of obviousness, the prior art references must teach or suggest all the claim limitations. It is believed that the limitation regarding

the final concentration of  $\alpha$ -acids in the washed hop solids extract (less than 5 mg/L) is not taught or suggested in Goldstein.

As stated above, nothing in Goldstein teaches or suggests the removal of residual  $\alpha$ -acids from the aqueous extract of hop solids. In fact, Goldstein does not appear to report the residual  $\alpha$ -acid concentration in the purified aqueous extract of hop solids. Thus, nothing in Goldstein would suggest the criticality of the residual  $\alpha$ -acid concentration in the purified aqueous extract of hop solids.

The Office Actions rely on *Ex parte Gray* and *Ex parte Obiaya* for legal rationale supporting the obviousness of the limitation regarding the final concentration of  $\alpha$ -acids in the washed hop solids extract. It is respectfully submitted the guidance of these cases does not overcome the deficiencies of Goldstein with respect to teachings on the final concentration of residual  $\alpha$ -acids from the aqueous extract of hop solids.

*Ex parte Obiaya*, 227 USPQ 58, was cited for the proposition that "the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious." (Underlining added.) This case is readily distinguishable from the present case in that the present claimed invention recognizes the criticality of the residual  $\alpha$ -acid concentration in the purified extract of hop solids. In other words, the differences between the prior art and the claimed invention with respect to the residual  $\alpha$ -acid concentration in the purified extract of hop solids is not obvious and therefore, *Ex parte Obiaya* is not on point in the present case.

The criticality of the residual  $\alpha$ -acid concentration in the purified extract of hop solids of the present invention is set out at page 4, line 16 to page 5, line 3 of the

present purification. It is reported that malt beverages made with the hop solids or extracts thereof disclosed in patents and applications such as 08/838,217 (now the Goldstein patent of record) were generally considered to be light stable. However, the inventors of the present application discovered that such malt beverages can still develop off-flavors and aromas when exposed to light. The inventors determined that such light instability is due to the presence of residual  $\alpha$ -acids. Thus, the claimed invention provides an unobvious difference with respect to the prior art of record and the guidance of *Ex parte Obiaya* fails to provide a legal rationale for the obviousness rejection.

*Ex parte Gray*, 10 USPQ2d 1922, was cited for the statement that "Purer forms of known products may be patentable, but the mere purity of a product, by itself, does not render the product unobvious." The Applicants do not dispute this statement; however, the guidance provided in *In re Cofer*, 148 USPQ 268, is more instructive in the present case. The Board of Appeals in *In re Cofer* attempted to fashion a broad proposition on the patentability of purer products. The reviewing court rejected this proposition and stated that

"We think the board failed to address itself to other factors which must be given weight in determining whether the subject matter as a whole would have been obvious, namely, whether the prior art suggests the particular structure or form of the compound or composition as well as suitable methods of obtaining that structure or form."

Thus, the issue is not whether the claimed product is purer than the prior art product and whether the claimed method produces a purer product. In contrast, the issue is whether such purer forms and associated methods were obvious.

As detailed above, malt beverages made with the hop solids or extracts thereof disclosed in Goldstein were generally considered to be light stable. However, the inventors of the present application discovered that such malt beverages can still develop off-flavors and aromas when exposed to light. The inventors determined that such light instability is due to the presence of residual  $\alpha$ -acids. Therefore, prior to the inventors' discovery, the criticality of the residual  $\alpha$ -acid concentration in purified extracts of hop solids was not appreciated by those skilled in the art. Accordingly, the inventors' discovery of the criticality of the residual  $\alpha$ -acid concentration and development of the claimed method and product are clearly unobvious over Goldstein.

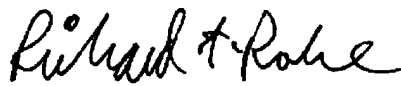
#### Conclusion

Therefore, it is believed that amended independent claims 1 and 6 (and claims 2-5 and 7-11 that depend thereon) are patentable over the prior art of record. It is respectfully submitted that the entire application has been placed in condition for allowance. Favorable reconsideration is respectfully requested.

No other fees are believed to be needed for this amendment. However, if additional fees are needed, please charge them to Deposit Account No. 17-0055.

Respectfully submitted,

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